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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,737	02/28/2005	Naoki Suehiro	052159	8318

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EXAMINER	
FLORES, LEON	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,737	SUEHIRO, NAOKI	
	Examiner	Art Unit	
	Leon Flores	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/28/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 5 should be designated by a legend such as ***--Prior Art--*** because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims (1 & 9) are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Co-pending Application No. 10/525,814. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

Instant Application
Re claim 1, A transmission method comprising the steps of: producing a plurality of finite-length signals of a length Nm $S_{A,x}=(x_0A, 0..0, x_1A, 0..0, x_2A, 0..0, .., x_{N-1}A, 0..0)$ $S_{B,y}=(y_0B, 0..0, y_1B, 0..0, y_2B, 0..0, .., y_{N-1}B, 0..0)$ using a plurality of data sequences $A=(a_0a_1..a_{N-1}), B=(b_0b_1..b_{N-1}), ..$ and a plurality of coefficient sequences $X=(x_0x_1..x_{N-1}), Y=(y_0y_1..y_{N-1}), ..;$ repeating each finite-length signal of said finite-length signals $S_{A,x}, S_{B,y}, ..$ to produce a pseudo periodic signal $.., S_{A,x}, S_{A,x}, S_{A,x}, .., .., S_{B,y}, S_{B,y}, S_{B,y}, .., ..;$ and cutting out a part from said pseudo periodic signal to produce a signal of a predetermined length longer than Nm for making said signal a transmission signal.

Re claim 9, A data structure of a transmission signal comprising a signal of a predetermined length produced in accordance with a method comprising the steps of:

producing a plurality of finite-length signals of a length Nm

$S_{A,X}=(x_0A, 0\ldots0, x_1A, 0\ldots0, x_2A, 0\ldots0, \ldots, x_{N-1}A, 0\ldots0)$

$S_{B,Y}=(y_0B, 0\ldots0, y_1B, 0\ldots0, y_2B, 0\ldots0, \ldots, y_{N-1}B, 0\ldots0)$

using a plurality of data sequences

$A=(a_0a_1\ldots a_{N-1}), B=(b_0b_1\ldots b_{N-1}), \ldots$

and a plurality of coefficient sequences

$X=(x_0x_1\ldots x_{N-1}), Y=(y_0y_1\ldots y_{N-1}), \ldots;$

repeating each finite-length signal of said finite-length signals

$S_{A,X}, S_{B,Y}, \ldots$

to produce a pseudo periodic signal

$\ldots, S_{A,X}, S_{A,X}, S_{A,X}, \ldots, \ldots, S_{B,Y}, S_{B,Y}, S_{B,Y}, \ldots, \ldots;$

and cutting out a part from said pseudo periodic signal.

Co-Pending application

Re claim 1, A communication method comprising the steps of: producing a plurality of transmission data sequences

$S_{A,X}=(x_0A, 0\ldots0, x_1A, 0\ldots0, x_2A, 0\ldots0, \ldots, x_{N-1}A, 0\ldots0)$

$S_{B,Y}=(y_0B, 0\ldots0, y_1B, 0\ldots0, y_2B, 0\ldots0, \ldots, y_{N-1}B, 0\ldots0)$

(0 indicates a null time of a unit length where no signal is generated)

using a plurality of data sequences

$A=(a_0 a_1 \cdots a_{N-1})$, $B=(b_0 b_1 \cdots b_{N-1})$, ...

and a plurality of coefficient sequences

$X=(x_0 x_1 \cdots x_{N-1})$, $Y=(y_0 y_1 \cdots y_{N-1})$, ...

and transmitting said plurality of transmission data sequences

$S_{A,X}$, $S_{B,Y}$, ...

onto the same transmission line at the same time.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Therefore, it would have been obvious to one of ordinary skills in the art to have incorporated this variation into the instant application, in the manner as claimed and as taught by Co-pending application, for the benefit of transmitting both the pilot and data at the same time.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims (1-9) are rejected under 35 U.S.C. 102(b) as being anticipated by Naoki Suehiro et al. (hereinafter Suehiro), "Very Efficient Wireless Frequency Usage by Coherent Addition of Multipath Signals Using ZCCZ Sequence Set", Graduate School of Systems and Information Engineering, July 2002.**

Re claim 1, Suehiro discloses a transmission method comprising the steps of:

producing a plurality of finite-length signals of a length Nm

$$S_{A,X}=(x_0A,\ 0\ldots0,\ x_1A,\ 0\ldots0,\ x_2A,\ 0\ldots0,\ \ldots,\ x_{e-1}A,\ 0\ldots0)$$
$$S_{B,Y}=(y_0B,\ 0\ldots0,\ y_1B,\ 0\ldots0,\ y_2B,\ 0\ldots0,\ \ldots,\ y_{e-1}B,\ 0\ldots0)$$

(See sections 2 & 3 "It is inherent that by using Kronecker product we yield this result.")

using a plurality of data sequences

$$A=(a_0a_1\ldots a_{e-1}),\ B=(b_0b_1\ldots b_{e-1}),\ \ldots$$

(Section 3 equation 1)

and a plurality of coefficient sequences

$$X=(x_0x_1\ldots x_{e-1}),\ Y=(y_0y_1\ldots y_{e-1}),\ \ldots;$$

(See sections 2 "X and Y", and section 3 equation 1)

repeating each finite-length signal of said finite-length signals

$$S_{A,X},\ S_{B,Y},\ \ldots$$

to produce a pseudo periodic signal

$$\ldots,\ S_{A,X},\ S_{A,X},\ S_{A,X},\ \ldots,\ \ldots,\ S_{B,Y},\ S_{B,Y},\ S_{B,Y},\ \ldots,\ \ldots;$$

(See sections 2-3 "set of periodic sequences")

and cutting out a part from said pseudo periodic signal to produce a signal of a predetermined length longer than Nm for making said signal a transmission signal. (See section 4, "A'")

Re claim 2, the reference of Suehiro further discloses the step of adding up a plurality of signals of a predetermined length, cut out from the pseudo periodic signal

produced from different finite-length signals, to produce a transmission signal. (See section 4)

Re claim 3, the reference of Suehiro further discloses that wherein a plurality of transmission signals are produced using different coefficient sequences and in an arbitrary combination of said plurality of transmission signals, a periodic cross-coefficient function of the transmission data of said transmission data sequences is 0 for all shifts. (See section 2)

Re claim 4, the reference of Suehiro further discloses that wherein a plurality of transmission signals are produced using different coefficient sequences and in an arbitrary combination of said plurality of transmission data sequences, the plurality of transmission signals are transmitted in parallel so that periodic spectrums of the transmission signals have no correlation. (See section 2)

Re claim 5, the reference of Suehiro further discloses that wherein said coefficient sequence is a row vector of a DFT matrix. (See section 2)

Re claim 6, the reference of Suehiro further discloses a communication method comprising the steps of: transmitting the transmission signal according to claim 1 or 2; and receiving said transmission signal and outputting a data sequence via a matched

filter corresponding to said coefficient sequence. (See section 4)

Re claim 7, the reference of Suehiro further discloses that wherein at least one transmission signal selected from said transmission signals is used as a pilot signal for measuring multi-path characteristics, and the received signal has multi-path characteristics of a transmission path. (See section 4)

Re claim 8, the reference of Suehiro further discloses that wherein a plurality of transmission signals are produced using different coefficient sequences of a spreading sequence and at least one transmission data sequence selected from said transmission data sequences is used as the pilot signal with other transmission signals used as transmission signals, further comprising the steps of: finding multi-path characteristics from the reception signal of the pilot signal; and removing the multi-path characteristics from the reception signal of the transmission signal using the multi-path characteristics, which are found, to produce a data sequence. (See sections 1 & 4.2)

Claim 9 has been analyzed and rejected w/r to claim 1 above.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Flores whose telephone number is 571-270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LF
November 1, 2007

DAVID C PAYNE
SUPERVISORY PATENT EXAMINER